RIVERSIDE COUNTY GLASSY-WINGED SHARPSHOOTER AREA-WIDE MANAGEMENT PROGRAM IN THE COACHELLA AND TEMECULA VALLEYS

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ABSTRACT
Riverside County has two general areas where citrus groves interface with vineyards, the Coachella Valley and the Temecula Valley. The Coachella Valley has 10,438 acres of table grapes in proximity to 12,000 acres of citrus and the Temecula Valley has 2,000 acres of wine grapes in proximity to 1,600 acres of citrus which are vulnerable to Pierce's disease (PD), *Xylella fastidiosa* (*Xf*). The grapes in the Coachella and Temecula areas of Riverside County are in jeopardy because of the glassy-winged sharpshooter (GWSS), the vector of the PD bacterium, build up in adjacent citrus groves. Citrus is an important year around reproductive host of GWSS in Riverside County, but also one that concentrates GWSS populations over the winter months during the time that grapes and many ornamental hosts are dormant. GWSS weekly monitoring in citrus in grapes began in March 2000 in Temecula Valley and 2003 in Coachella Valley by trapping and visual inspections. Systemic insecticides such as Admire (imidacloprid), gave excellent control. Coachella Valley GWSS populations have increased since the treatment program was initiated in 2003 but have declined substantially relative to the pre-action levels due to insecticide applications.

INTRODUCTION
The wine grape industry and its connecting tourist industry in Temecula Valley generate $100 million in revenue for the economy of the area. GWSS/PD caused a 30% vineyard loss and almost brought this wine growing region to its knees. An area-wide GWSS management program initiated in the spring of 2000 saved the industry from a 100% loss. Only a continuation of an area-wide GWSS management program will keep the vineyards viable in Temecula. The table grape industry in the Coachella Valley is represented by 10,465 acres of producing vines, which generate fresh market grapes valued at an average of $110 million annually. The GWSS was identified in the Coachella Valley in the early 1990's. Population increases of this insect in Coachella Valley in the last three years have increased the danger of PD occurrence in this area, as has occurred in similar situations in the Temecula Valley and San Joaquin Valley. In July 2002, the occurrence of *Xf,* the PD bacterium, was found in 13 vines from 2 adjacent vineyards in the southeastern part of Coachella Valley. With this discovery, and the increasing GWSS populations, there was and is a real need to continue an area-wide GWSS/PD management program, to prevent an economic disaster to the work forces and connecting small businesses of Mecca, Thermal, Coachella, Indio, etc. that depend upon the vineyards for a big portion of their incomes. Only a continuation of an area wide GWSS/PD management program will keep the vineyards viable in Coachella. At present there are no apparent biological or climatological factors that will limit the spread of GWSS or PD. GWSS has the potential to develop high population densities in citrus. Insecticide treatments in citrus groves preceded and followed by trapping and visual inspections to determine the effectiveness of these treatments are needed to manage this devastating insect vector and bacterium. Approximately 5,200 acres of citrus in Riverside County were treated for the GWSS in February through July, 2004 between a cooperative agreement with USDA-APHIS and the Riverside Agricultural Commissioner's Office under the "Area-Wide Management of the Glassy-Winged Sharpshooter in the Coachella and Temecula Valleys." The cost of Riverside County GWSS treatments was close to $1,000,000.

OBJECTIVES
1. Delineate target areas for follow-up treatments to suppress GWSS populations in the Temecula Valley and Coachella Valley for 2005.
2. Determine the impact of the 2003 GWSS area-wide treatments to suppress GWSS populations in citrus groves and adjacent vineyards.

RESULTS AND CONCLUSIONS

The programs in Coachella and Temecula were dependent upon grower, pest management consultants, citrus and vineyard manager's participation. The areas encompass approximately 28,000 acres. Representatives of various agencies were involved in the program, they were as follows: USDA-ARS, USDA-APHIS, CDFA, Riverside County Agricultural Commissioner, UC Riverside, UC Cooperative Extension, and grower consultants. Representatives of these agencies meet to review the program. Newsletters are sent to growers, managers, wineries, and agencies with information on GWSS populations and insecticide treatments via e-mail. The information from Temecula is sent weekly, while information from Coachella goes to the various parties monthly.

The GWSS/PD citrus groves and vineyards within the GWSS/PD management areas were monitored weekly to determine the need and effect of insecticide treatments on GWSS populations. Yellow sticky traps (7 x 9 inches) were used to help determine GWSS population densities and dispersal/movement within groves and into vineyards (Figures1 and 2). A total of 986 GWSS yellow sticky traps are monitored weekly. Based on trap counts and visual inspection, approximately 4,000 and 700 acres of citrus were treated in Coachella and Temecula, respectively for GWSS control in 2005. In Temecula and Coachella Valley treatments for GWSS in citrus were initiated when at least 1-2 GWSS adults were found at the same trap location for two consecutive weeks. In Temecula Valley only the citrus where the GWSS was found were treated. In Coachella Valley all citrus located within a 0.5 mile radius from the trap find were treated as a preventive measure to protect surrounding groves. The decision to treat more area from GWSS finds in Coachella than what was treated in Temecula differed because of terrain, urban development and the history of GWSS blow-ups in Kern County and Temecula Valley the fourth year after GWSS area-wide programs were initiated. Approximately 90% of the citrus was treated with a single application of Admire/Merit (imidacloprid) at 36 ounces per acre; 9% with PyGanic (1.4% Pyerthrins) at 7 pints per acre; and the remainder with Assail (acetamiprid) at the rate of 2 ounces per acre. PyGanic was used to treat organically grow citrus. In most areas where PyGanic was used to manage GWSS a follow up treatment of PyGanic was applied within two weeks after the first application.

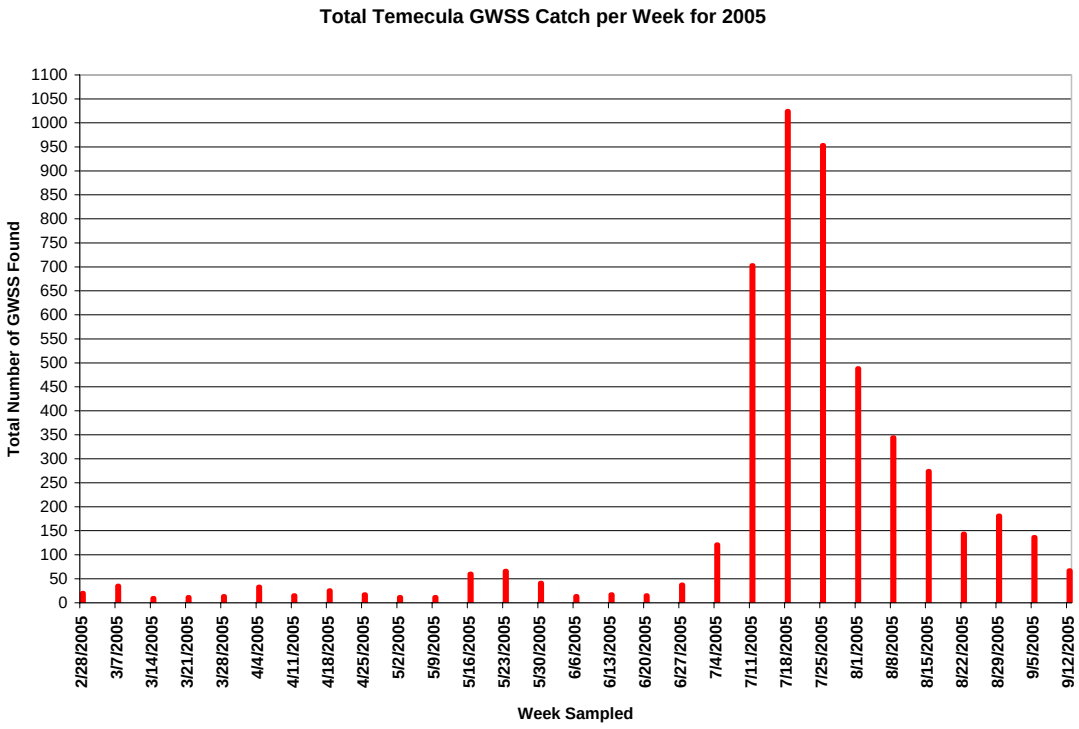

Figure 1. In 2005, high numbers of adult GWSS were caught on the yellow sticky traps in Temecula, with populations peaking in July reaching a total of almost 1,050 trapped**.**

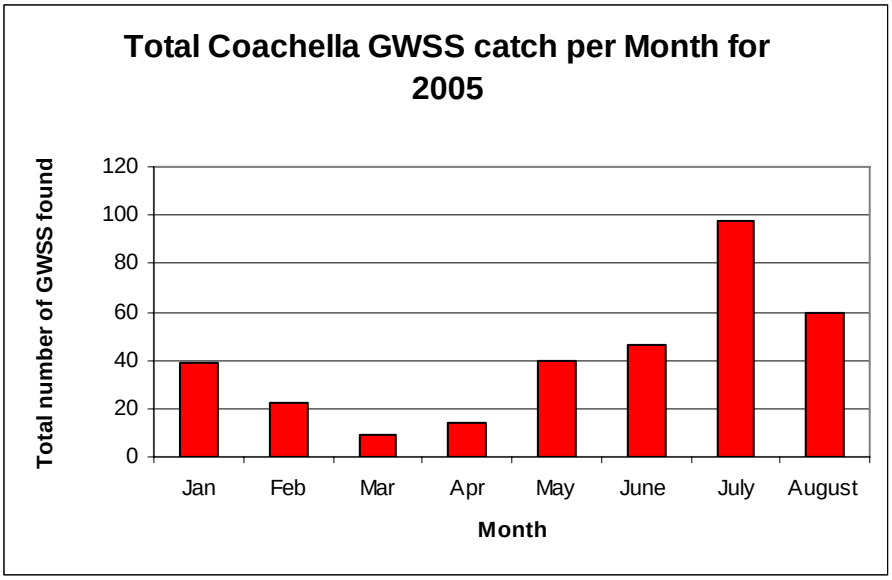

Figure 2. GWSS populations in Coachella Valley peaked in July with a high of 100 trapped.

For a successful area-wide GWSS management program with large acreages of citrus, a management program has to be initiated. Organic insecticides are not as effective as the neonicotinoid insecticides such as Admire or Assail for controlling GWSS. Therefore, organic insecticides will have to be applied more frequently than its synthetic counterpart. In our Riverside County GWSS area wide program organic citrus groves pose challenges to area-wide GWSS management programs (Figure 3).

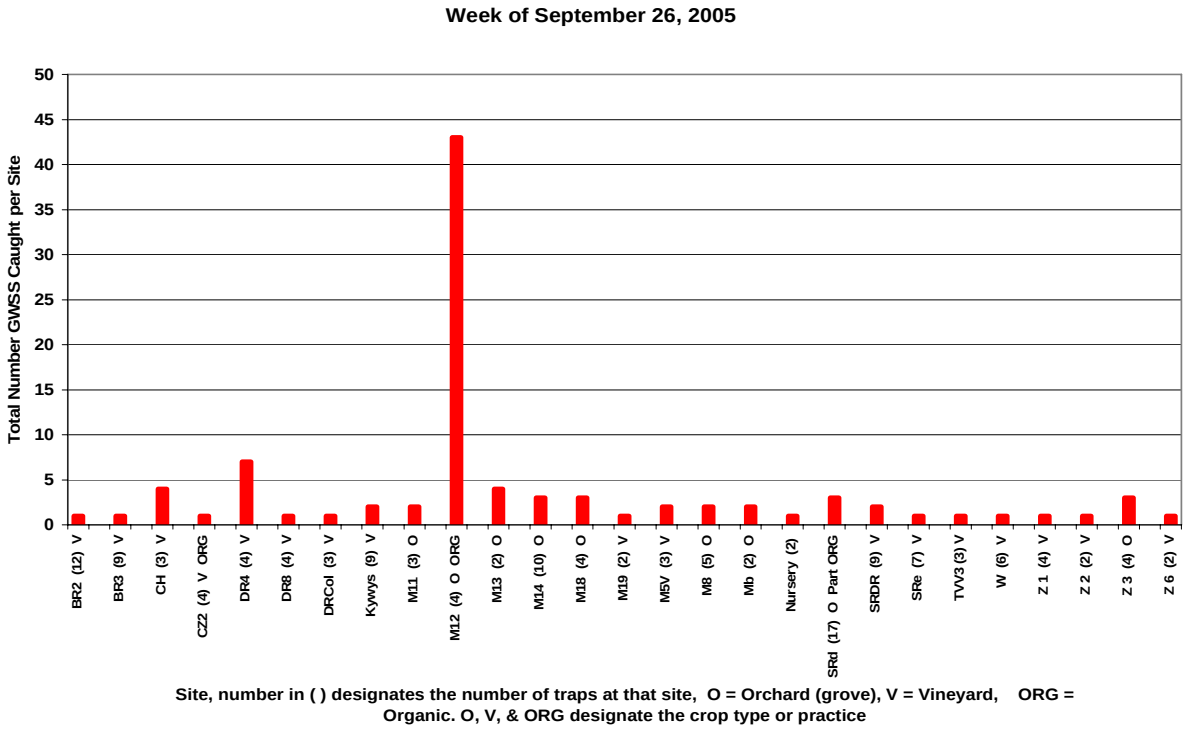

Figure 3. Temecula GWSS adults caught for the week of September 26, 2005.

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